

STORAGE ENCLOSURE

- [01] This application claims priority to provisional U.S. Application Ser. No. 60/223,841, filed August 8, 2000.

FIELD OF THE INVENTION

- [02] The invention relates to storage enclosures and, in particular, a storage enclosure for outdoor use which is securable and protected from elements while allowing easy set-up and operation.

BACKGROUND OF THE INVENTION

- [03] Currently, many constructions are generally used and available for storage enclosures. However, there are many drawbacks to the presently available storage enclosures. One example of using a commercial storage enclosure is for the display and retail of products at a gasoline service station, often located on a sidewalk alongside a building. Many storage enclosures have doors that open from the front of the enclosure and swing to the sides of the enclosure to present to a customer the contents located inside the enclosure. Accordingly, such enclosures require space to their sides for the doors either to swing through or to reside when the enclosure is open. Therefore, such an enclosure wastes space that could otherwise be utilized.
- [04] At times, such an enclosure may be located between gasoline pumps on an island between lanes for re-fueling vehicles. When an enclosure has doors that swing open, the doors typically require space to the sides of the enclosure. This wastes space, such as space between pumps on an island. In addition, the space between pumps is often not sufficient to accommodate the doors of the enclosure. Accordingly, many enclosures cannot be located on an island between pumps.
- [05] In addition, when an enclosure is located alongside a building such as a gasoline service station or otherwise not covered, there is typically not any protection from

weather and environmental effects. Accordingly, the enclosure itself should provide protection for that which is stored in the enclosure. Many enclosures, though, are not capable of providing sufficient protection, allowing rain to enter the enclosure. Often this is because the enclosures have seams or welds that corrode easily or are not sufficiently tight to prevent leakage. Some closures are simply unable to withstand the elements due to poor construction.

- [06] As many enclosures are used in outdoor commercial settings, such as a service station or a mass merchant, it is desirable that the enclosure secures the contents from pilferage while the enclosure is left in place. For this to occur, the enclosure should be sturdy and should be easily secured. Furthermore, the enclosure should minimize the effort and detail required for opening at the beginning of a retail period and for closing at the end of a retail period.
- [07] One issue with storage enclosures for outdoor use is quickly changing weather. For instance, a rainstorm may suddenly begin. In such a case, there are a number of products that could be damaged by exposure to rain, such as soda packaged in cardboard boxes. Therefore, the enclosure ideally is closed quickly and simply by employees who have other responsibilities that must be put on hold while the employee closes the enclosure.
- [08] The items stored in a storage enclosure are ideally easily accessed during the retailing period. When closed for the night, the enclosure should be secure.
- [09] At a retail site, employees are often expected to handle and assemble the enclosures when they arrive at the business. As these activities detract from the time that an employee could otherwise be serving the business, the handling and assembling of the enclosures should be simple and quick. Assembly of many conventional enclosures is complicated and cumbersome. Additionally, the weight and dimension of an enclosure can make the enclosure expensive to ship or transport. It is preferred that the enclosure be simple to install and assemble; relatively compact during shipment,

while still providing for high storage volume once assembled. The enclosure is preferably weather-resistant and securable against theft of the stored contents.

BRIEF SUMMARY OF THE INVENTION

- [10] In accordance with one aspect of the present invention, a storage enclosure including a base, an outer lid segment and a bottom lid segment, wherein the lid segments are cascading, is disclosed. The lid segments have closing ridges holding each lid segment in a shingled manner, when the enclosure is closed, thereby making the enclosure resistant to environmental debris, precipitation, and unauthorized access to the enclosure's stored contents. The enclosure may be collapsed to the combined size of the base and the outer lid segment. The enclosure includes means for securing the enclosure in both open and closed positions, for instance, a lock bracket attached to the base, a lock bracket attached to the outer lid segment, and lock openings located in the bottom lid segment.
- [11] In a further aspect of the present embodiment the enclosure includes intermediate lid segments. The intermediate lid segments also have closing ridges holding each lid segment in a shingled manner, which makes the enclosure resistant to environmental debris or precipitation.
- [12] The bottom lid segment includes a protruding lip. The protruding lip extends over a portion of the base. Lifting the protruding lip lifts the lid segments. Alternatively, pairs of opening ridges cooperate to open each of the cascading lid segments.
- [13] The base includes a scallop and a front edge for mating with the protruding lip.
- [14] The segments are nested within each other.
- [15] In at least one embodiment of the present invention, the base includes a wall within the bottom lid segment. The wall and the bottom lid segment serve to retard the entrance of environmental debris or precipitation from entering the storage enclosure.

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- [16] In accordance with a second aspect of the present invention, a storage enclosure including a base, an outer lid segment, and at least one support securing the outer lid segment in a vertical position is disclosed. Preferably, the enclosure includes a plurality, and more preferably two, supports. The supports are each located within a channel in the outer lid segment. Each support is displaceable from a position generally entirely within the outer lid segment to a position within both the outer lid segment and the base. The support may be a tube with a rectangular or a circular cross-section. Preferably, the enclosure includes tube brackets for each tube. Preferably, each support is displaceable by gravity.
- [17] In accordance with a further aspect of the present invention, the lid segments include axle bores aligned with each other and into which an axle is inserted. The axle is preferably flush with the outside surface of the outer lid segment. Preferably, the axles are secured on the inside of the enclosure with a cotter pin.
- [18] A storage enclosure of the present invention is easy to erect and open. The enclosure includes gravity-displaceable supports such that, when an outer lid segment is lifted to a vertical position, the supports lock the enclosure in an erect position. The enclosure includes overlapping lid segments. Lifting the bottom lid segment opens the enclosure simply and conveniently.

BRIEF DESCRIPTION OF THE DRAWINGS

- [19] In the drawings, Fig. 1 is a side elevation view of a storage enclosure in accordance with a first embodiment of the invention in an erect and closed position;
- [20] Fig. 2 is side elevation view of the first embodiment in an erect and open position;
- [21] Fig. 3 is a side elevation view of the first embodiment in a non-erect or collapsed position;
- [22] Fig. 4 is a front elevation view of the enclosure in an erect and open position;

- [23] Fig. 5 is an assembly view of an outer lid segment, two intermediate lid segments, and a bottom lid segment of the first embodiment;;
- [24] Fig. 6 is a perspective view of the first embodiment during an assembly step;
- [25] Fig. 7 is a side elevation view of an intermediate lid segment;
- [26] Fig. 8 is a perspective view of the first embodiment during an assembly step;
- [27] Fig. 9 is a perspective view of a hinge bracket and axle of the first embodiment;
- [28] Fig. 10 is a perspective view of the axle and hinge bracket of the first embodiment;
- [29] Fig. 11 is a perspective view of a storage enclosure in accordance with a second embodiment of the invention in an erect, closed position;
- [30] Fig. 12 is a perspective view of the second embodiment in an erect, open position;
- [31] Fig. 13 is a perspective view of the second embodiment in a non-erect position.
- [32] Fig. 14 is a fractional enlarged side view showing how the inner and outer closing ridges of the cascading lid segments and the protruding lip cooperate.
- [33] Fig. 15 is a fractional enlarged side view similar to Fig. 14 showing an alternative embodiment including inner and outer opening ridges instead of the protruding lip.
- [34] Corresponding reference numerals will be used throughout the Detailed Description of the Invention.

DETAILED DESCRIPTION OF THE INVENTION

- [35] Referring now to Fig. 1, an enclosure 10 of the present invention is depicted in an erect and closed position containing contents 12. The enclosure comprises a base 14, an outer lid segment 16, a bottom lid segment 18, and intermediate lid segments 20.

For comparison, Figs. 2 and 3 depict the enclosure 10 in an erect, open position and a non-erect position, respectively.

- [36] In Fig. 1, the height 22 of the erect enclosure 10 is 59" while the base 14 has a depth 24 of 30". The width 26 of the base 14 of the enclosure 10 is approximately 62", as is shown in Fig. 4. These dimensions for the erect position of Fig. 1 allow the enclosure 10 to display and retail the contents 12, wherein the contents 12 are one hundred twenty five "12 packs" of beverage soda cans. As seen in Fig. 3, the non-erect position of the enclosure has a depth 30 of 39" and a height 32 of 24", minimizing the size required for storage and shipment of the non-erect, or collapsed, enclosure 10. Accordingly, the size of the enclosure 10 when in use is large while allowing the size of the enclosure 10 to be much smaller during shipping or transport. The dimensions stated herein may be varied without deviating from the scope of the invention.
- [37] Referring now to Fig. 5, the outer lid segment 16 is depicted comprising a back 40, a top 42, and two sides 44. The back 40 has an outer surface (not shown) and an inner surface 50. The inner surface 50 of the back 40 has a bottom edge 52, a generally raised portion 54, and a peripherally located border 56 around the raised portion 54. The raised portion 54 is generally rectangular, and the border 56 surrounds each side of the raised portion 54. The cross-sectional thickness of the back 40 in the region of the border 56 is less than the cross-sectional thickness of the back 40 in the region of the raised portion 54. The difference in cross-sectional thickness of the raised portion 54 and the border 56 forms a wall 58. The lateral width of the border 56 is uniform for each length of the border, though it may vary from length to length. The width of the border 56 preferably is sized to accommodate the intermediate lid segments 20, and the bottom lid segment 18 located between the wall 58 and the sides 44 of the outer lid segment 16 (see Fig. 6).
- [38] The top 42 of the outer lid segment 16 is generally an arc such that the top 42 is the shape of a portion of a cylindrical wall. The border 56 of the back 40 meets an inner edge of the top 42, as at 60. The lateral edges 62 of the top 42 meet edges of the sides

44. The sides 44 of the outer lid segment 16 are generally wedge-shaped and are orthogonal to the back 40 and the top 42.
- [39] In the present embodiment of the enclosure 10, two intermediate lid segments 20 are included. Each intermediate lid segment 20 has a top wall 70, generally shaped as a portion of a cylindrical wall, and two sides 72 generally wedge-shaped. It should be noted that the number of intermediate lid segments 20 may vary without deviating from the scope of the invention, each successive intermediate lid segment 20 being sized as to nest within the previous intermediate lid segment, as shown in Fig. 6.
- [40] As can be seen in Fig. 5, the bottom lid segment 18 has sides 80 generally wedge-shaped, a top wall 82, and a protruding lip 84. The top wall 82 is generally shaped as a portion of a cylindrical wall. The protruding lip 84 extends from the top wall 82.
- [41] Referring now to Fig. 6, the bottom lid segment 18 and the intermediate lid segments 20 are sized as to nest within the top 42, sides 44, and wall 58 of the outer lid segment 16. Specifically, the bottom lid segment 18 is sized so as to nest within the smallest intermediate lid segment 20, and each intermediate lid segment 20 is sized to fit within the successively larger intermediate lid segment 20. The protruding lip 84 of the bottom lid segment 18 extends a distance great enough so as to cover at least a portion of the outer lid segment 16, as can be seen in Fig. 8. When nested (open position), the front edges 86 are generally aligned such as to form a plane that the protruding lip 84 crosses.
- [42] The base 14 has a generally rectangular bottom 90, the outer surface 91 of which is in contact with the ground or a support surface when in use. The base 14 has a back 92 perpendicular to the bottom 90, and two sides 94 generally triangular-shaped and orthogonal to the planes of both the bottom 90 and the back 92. The sides 94 have a hypotenusal face 96.
- [43] When the enclosure 10 is in an erect, closed position, the front edge 86 of the bottom lid segment 18 rests atop the hypotenusal face 96 of the sides 94. However, this

requires accommodation for the protruding lip 84. The protruding lip 84 is accommodated as each hypotenusal face 96 has a scallop 98 and the bottom 90 of the base 14 has a front edge 100 extending between the scallops 98. The size of the scallops 98 and front edge 100 is such that the front edge 100 mates with the protruding lip 84 when the enclosure 10 is in a closed position. When the enclosure 10 is in a closed position, the protruding lip 84 extends away from the bottom lid segment 18 at an angle below horizontal so that water or other environmental debris runs off the protruding lip 84.

[44] Referring now to Fig. 7, the top wall 70 of an intermediate lid segment 20 is depicted. The top wall 70 includes an outer closing ridge 102 and an inner closing ridge 104. Although discussed in reference to an intermediate lid segment 20, the bottom lid segment 18 also has an outer closing ridge 102 and the outer lid segment 16 has an inner closing ridge 104. As the intermediate lid segments 18, outer lid segment 16, and the bottom lid segment 20 move relative to each other, the outer closing ridges and the inner closing ridges 102, 104 of lid segment catch each other so that the lid segments 16, 18, and 20 are held in proper position when in the enclosure 10 is in a closed position. The proper position is such that the lid segments overlap so as to cascade and retard invasion of the enclosure 10 by environmental debris. This overlapping and cascading of lid segments provides weather-resistance in a manner similar to shingles on a roof. When the enclosure is closed, the cascading lid segments also prevent unwanted access to the contents of the enclosure; thereby securing the contents from pilferage.

[45] Fig. 14 is a fractional enlarged side view showing how the inner and outer closing ridges 102 and 104 of the cascading lid segments and the protruding lip cooperate. As protruding lip 84 is lifted in the direction of arrow 146, the protruding lip 84 lifts the cascading intermediate lid segments 20. As the protruding lip 84 and the bottom lid segment 18 are lowered in the direction of arrow 148, inner closing ridges 102 catch on outer closing ridges 104. In this manner, when the enclosure is closed, the cascading lid segments are arranged in a shingled manner.

- [46] Fig. 15 is a fractional enlarged side view similar to Fig. 14 showing an alternative embodiment including inner and outer opening ridges instead of the protruding lip. As the bottom lid segment 18 is lifted in the direction of arrow 146, inner opening ridges 144 catch on outer opening ridges 142 to cause bottom lid segment 18 and the intermediate lid segments 20 to fold into outer lid segment 16. As the bottom lid segment 18 is lowered in the direction of arrow 148, inner closing ridges 102 catch on outer closing ridges 104 as described above in connection with Fig. 14.
- [47] Referring to Fig. 8, each lid segment 16, 18, and 20 also has two axle bores 106, one on each side of the lid segment, and when the lid segments 16, 18, and 20 are nested the axle bores 106 are aligned with each other.
- [48] When the enclosure 10 is erected, means (discussed below) are provided for securing the outer lid segment 16 in a vertical position above the base 14. In order to provide for attaching these means, vertically oriented channels 110 are provided (see Fig. 4) in both the outer lid segment 16 and the base 14.
- [49] In certain embodiments, the outer lid segment 16, the intermediate lid segments 20, the bottom lid segment 18, and the base 14 may be made from molded materials and the above described features of the base 14, and outer, intermediate, and bottom lid segments 16, 18, 20 are formed integrally.
- [50] As is shown in Fig. 6, the front edge 100 has an attached lock bracket 108 and the outer lid segment 16 has a pair of lock bracket openings 109, only one of which is labeled in Fig. 6. The upper lock bracket opening is shown in Fig. 6 with an eyelet portion of lock bracket 108 protruding through the upper lock bracket opening. A padlock can be inserted through the eyelet to secure the enclosure in the open position. In a similar manner, the enclosure 10 can also be secured in a closed position by a padlock or other securing means using the lock bracket 108 attached to the base 14. It should be noted that there are many ways in which one may secure the enclosure 10 in either an open or a closed position, and the selection of a padlock and

lock brackets 108 extending through lock bracket openings 109 should in no way be viewed as limiting the scope of the present invention.

- [51] Referring to Fig. 8, the channels 110 are depicted each with an attached tube bracket 112. In the preferred embodiment, screws or bolts secure the tube brackets 112 to both the outer lid segment 16 and the base 14. As the enclosure 10 is assembled, a support is inserted into the channels 110 of the outer lid segment 16, shown in this embodiment as a tube 114 with a preferred rectangular cross-section. The base 14 is then abutted to the outer lid segment 16, as is shown in Fig. 6.
- [52] As can be seen in Fig. 8, a top edge 120 of the back 92 of the base 14 is non-uniform. The top edge 120 has low portions 122 providing clearance for the lid segments 16, 18. In addition, the top edge 120 has hinge bracket portions 124 and a tube bracket portion 126, each of which overlap with the border 56 of the back 40 of the outer lid segment 16. The hinge bracket portions 124 provide surfaces for a hinge bracket 130 to be secured. As can be seen in Fig. 10, a pair of washers 132 is inserted between the bottom lid segment 18 and each hinge bracket 130.
- [53] Referring to Figs. 9 and 10, axles 134 are then inserted through the axle bores 106 of the lid segments 16, 18, and 20. The axles 134 are inserted so as to be flush with the outside of the outer lid segment 16, so as to extend through the pair of washers 132 and through the hinge bracket 130, and so as to abut a side wall 138 of the tube bracket portion 126. A pin 140 is used to secure the axle 134 so that the axle 134 cannot be removed unless the enclosure 10 is in an open position.
- [54] As described, the enclosure 10 is assembled. For convenience, the assembly of the enclosure is typically done with the components being horizontally oriented as opposed to the vertical orientation of the components when the enclosure is both assembled and erected. There are two manners for erecting the enclosure 10. The more strenuous manner is to slide the tubes 114 from a position generally entirely within the channels 110 of the outer lid segment 16 to a position within the channels

110 of both the outer lid segment 16 and the base 14. Then, the entire enclosure 10 is lifted from a horizontal to a vertical position.

- [55] As it is desired to minimize the strain upon a person erecting the enclosure 10, a second manner is provided. With the base 14 resting on the ground, the outer lid segment 16 is lifted to a vertical position. It should be noted that a person could alternatively lift the outer lid segment by lifting the protruding lip 84. Once a vertical position is reached, gravity will cause the tubes 114 to slide from a position generally entirely within the channels 110 of the outer lid segment 16 to a position within the channels 110 of both the outer lid segment 16 and the base 14. In this manner, the enclosure 10 is erected with the outer lid segment 16 secured in a vertical position.
- [56] When the enclosure 10 is in a non-erect position, as depicted by Fig. 3, it is small and compact. The enclosure 10 can easily be packaged in a box (not shown) for shipment or transport. The enclosure 10 may be shipped fully assembled, allowing a user to remove the enclosure 10 from the box, place the enclosure 10 in the desired location, and erect the enclosure by merely lifting either the outer lid segment 16 or protruding lip 84 whereby the tubes 114 are displaced by gravity so as to secure the outer lid segment 16 in a vertical position and secure the enclosure 10 in an erect position.
- [57] Referring again to Fig. 2, the enclosure is seen providing a large access opening to the stored contents 12 from all sides of the enclosure 10. It is also seen that no portion of the contents 12 are particularly difficult to reach, and, were any portion of the contents the last remaining items, visibility of the contents 12 would be high.
- [58] A second embodiment of the present invention in a closed, erect position is depicted in Fig. 11 as enclosure 200. In this embodiment, the enclosure 200 has a base 210, a bottom lid segment 212, intermediate lid segments 214, and an outer lid segment 216, each incorporating many of the features of the bottom lid segment 18, intermediate lid segments 20, and outer lid segment 16 as previously discussed. The base 210 rests generally upon the ground or a support surface. As can be seen in Fig. 12, a top surface 218 of the base 210 has a short wall 220 close to but not at an outer periphery

222 of the base 210. The wall 220 allows the enclosure 200 to retard the entry of environmental debris or precipitation.

- [59] In the present embodiment, the outer lid segment 216 is held in a vertical position by a support similar to the tube 114 of the first embodiment. In this embodiment, the support is a vertical post 224; preferably two posts 224 and preferably tubes with a round cross-section. Each post 224 is located within a channel 226, in essence the same as the channels 110 of the first embodiment. The channel 226 is a vertical bore (when the enclosure 200 is erect) with an opening at its lowest end, as at 228. When the outer lid segment 216 is raised so as to erect the enclosure 200, each post 224 is entirely contained within the channel 226. As the outer lid segment 216 approaches a vertical position, each post 224 is displaced by gravity so as to insert itself in an aligned bore 229 in the base 210. Alternatively, the outer lid segment 216 may be held in a vertical position and secured to the base 210 in numerous manners known in the field of the art, for instance, screws (not shown) inserted through the back 232 (see Fig. 13) of the outer lid segment 216, or posts (not shown) may be inserted into the base 210 which rise against the inner surface of the outer lid segment 216, thereby preventing the outer lid segment 216 from rotating forward.
- [60] As can be seen in Fig. 13, the enclosure 200 collapses to a non-erect position. In a non-erect position, the enclosure 200 is much smaller than its erect position, thereby making transportation easier.
- [61] In order to provide a stop for proper vertical orientation of the outer lid segment 216 in the present embodiment, the outer lid segment 216 may have a lower depending flange (not shown).
- [62] Incorporating the above discussion, there are numerous manners for securing the enclosure 200, as are known in the art.
- [63] Some typical construction materials for the base 14 and lid segments 16, 18, and 20 might be, but are not limited to sheet metal, a metal frame with a plastic central panel,

or plastic which may be blow molded, injection molded plastic foam, or corrugated plastic sheet, or a combination of these materials. In the preferred embodiment, the materials of the lid segments 16, 18, and 20, and base 14 are plastic or polymeric. In addition, the materials used in enclosure 200 may be the same as those used in enclosure 10.

- [64] A number of enhancements may be made in the present embodiments of the present invention while not deviating from the scope of the invention. A drain may be included in the base 14 and 210 of the enclosures 10 and 200, respectively. The tubes 114 or the channels 226 may provide slots or holes for accommodating shelves or signage within the enclosure. The enclosures 10 and 200 may also include an auto-lock mechanism for holding the enclosures 10 and 200 in an open position. On the outer portions of the enclosure 10 and 200, advertisements, graphics, and/or pricing information may be attached or displayed.
- [65] While the invention has been described with respect to specific examples including presently preferred modes of carrying out the invention, those skilled in the art will appreciate that there are numerous variations and permutations of the above described systems and techniques that fall within the spirit and scope of the invention as set forth in the appended claims.